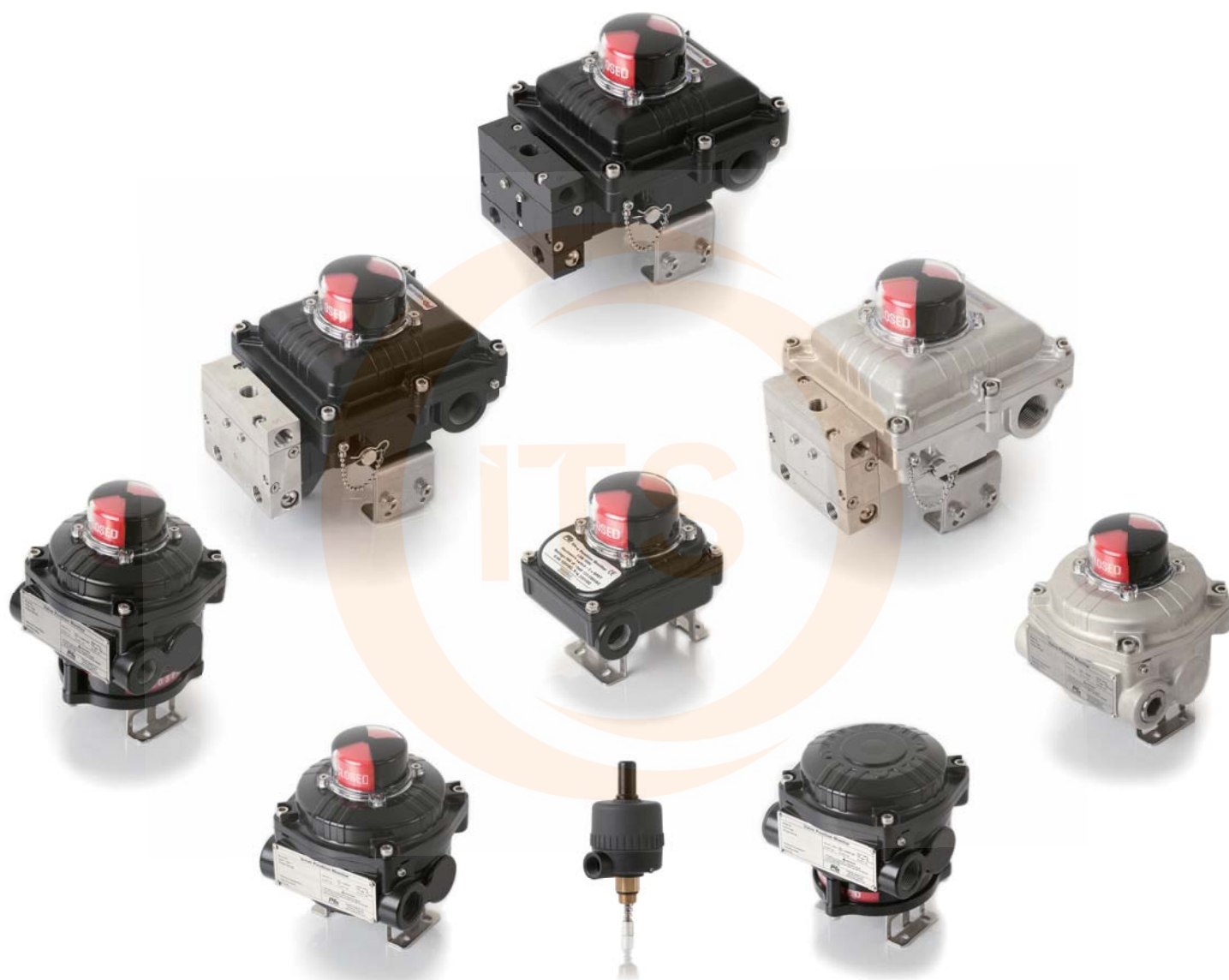




LSB Series

Valve Position Monitor



All innovation
on driving your valve automation

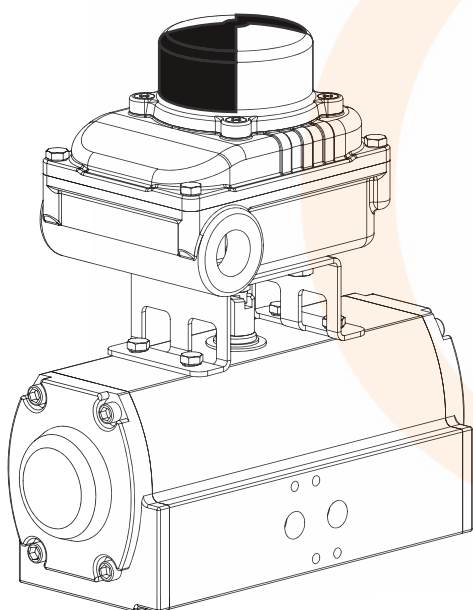
www.powergenex.com



Robust valve position monitor with a good recognizable beacon, various switches and feedback options

Features

- ▶ Weatherproof to IP66 & 67 (optionally IP68)
- ▶ Rugged aluminum die-cast housing or 316SS
- ▶ Various switches and sensors (available with Honeywell / P&F)
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator



Options

- ▶ 2 x SPDT mechanical limit switch
- ▶ 4 x SPDT mechanical limit switch
- ▶ 2 x P&F proximity sensor

Specifications

Model	LSB-1000	
Protection Class	Ex ia IIC / IP66 & 67 (optionally IP68)	
Switches / Sensors	See page 5	
Operating Temperature	- 40 ~ +100 °C (-40 ~ +212 °F)	
Electrical Connections	PF 1/2, NPT 1/2, M20 x 1.5, PG13.5	
Body Material / Painting	Aluminum die-cast / powdered-coating	Stainless steel 316
Weight	0.8 kg	1.5 kg



< With beacon indicator >



< With bottom indicator >



< With stainless steel 316 housing >



Explosion proof robust valve position monitor with a good recognizable beacon, bottom indicator, various switches and feedback options

Features

- ▶ Flameproof ATEX / IECEx / EAC / KCs Ex d IIC
- ▶ Intrinsic safety ATEX / IECEx / EAC / KCs Ex ia IIC
- ▶ Rugged aluminum die-cast housing or optionally stainless steel 316 housing
- ▶ Optionally dual beacons or bottom indicator
- ▶ Various switches and sensors (available with Honeywell / P&F / Hermetically-sealed magnetic sensor)
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator

Options

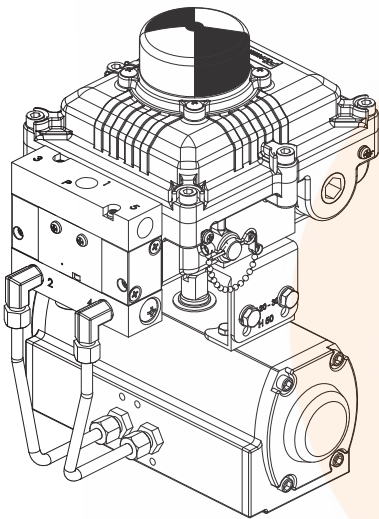
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 4 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

Specifications

Model	LSB-30xx	LSB-31xx
Explosion proof / Protection Class	Flameproof - Ex d IIC - IP66&67 (optionally IP68)	
	Intrinsic safety - Ex ia IIC - IP66&67 (optionally IP68)	
	Intrinsic safety - Ex ia IIIC - IP66&67 (optionally IP68)	
Switches / Sensors	See page 5	
Operating Temperature	- 40 ~ +110°C (- 40 ~ +230°F)	
Electrical Connections	PT 3/4, NPT 3/4, PF 1/2, NPT 1/2, M20 x 1.5	NPT 3/4, NPT 1/2
Body Material / Painting	Aluminum die-cast / powdered-coating	Stainless steel 316 / 316L
Weight	2 kg	4 kg



With built-in solenoid valve



Explosion-proof robust valve position monitor with built-in solenoid and more feedback options and designed to provide an outstanding performance under harsh working environments

Features

- ▶ Flameproof ATEX / IECEx / TR-CU / KC Ex d IIB+H₂ T6
- ▶ Rugged aluminum die-cast or stainless steel housing
- ▶ Compact single unit with built-in solenoid valve
- ▶ More economical in costs and simple wiring to a single unit comparison with separate installations of explosion proof limit switches and explosion proof solenoid valve
- ▶ Auto / Manual button easy to convert
- ▶ NAMUR mounting shaft or fork lever shaft adjustable for a non-NAMUR pneumatic actuator

Options

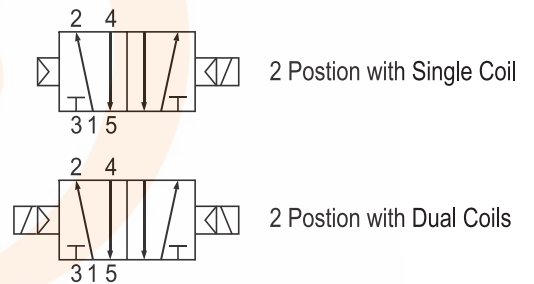
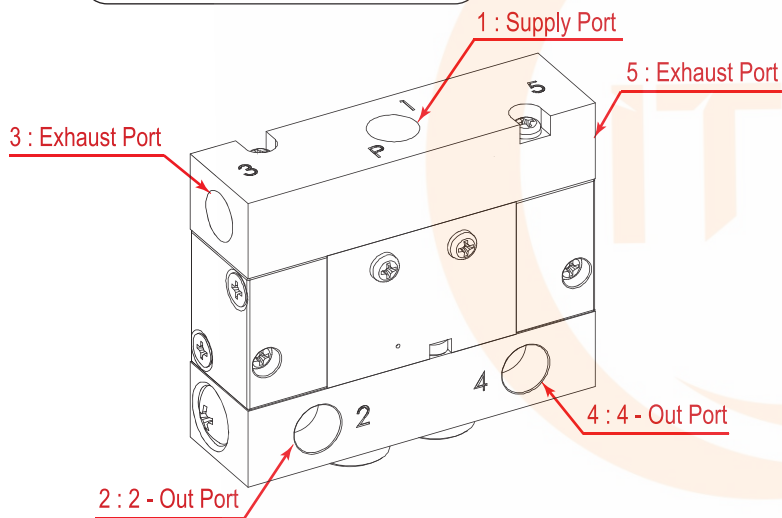
- ▶ 4 x SPDT mechanical limit switch
- ▶ 4 x P&F proximity sensor
- ▶ 2 x Hermetically-sealed magnetic sensor
- ▶ 4 - 20mA output position transmitter

Specifications

Model	LSB-7000	LSB-7100	LSB-7200
Explosion proof / Protection Class	ATEX / IECEx / TR-CU / KC - Ex d IIB+H ₂ - IP66&67		
Operating Air Pressure	1.5 ~ 10 bar		
Air Supply Pressure	Max. 10 bar		
Mechanical Switches/Proximity Sensors	See page 5		
Operating Voltage of Solenoid Valve	24 VDC / 48 VDC / 110 VAC / 220 VAC		
Manual Override of Solenoid Valve	Push button type		
Response Time of Solenoid Valve	25 ms		
Coil Insulation Class	Class F		
Operating Temperature	-30 ~ +75 °C		
Pneumatic Connections	PT(Rc) 1/4, NPT 1/4		NTP 1/4
Electrical Connections	PT 1, NPT 1 PT 3/4, NPT 3/4, PF 1/2, NPT 1/2		NPT 1, NPT 3/4, NPT 1/2
Body Material	Aluminum die-cast		Stainless steel 316
Solenoid Valve Body Material	Aluminum die-cast	Stainless steel 316	
Weight	2.5 kg	3.5 kg	5.8 kg

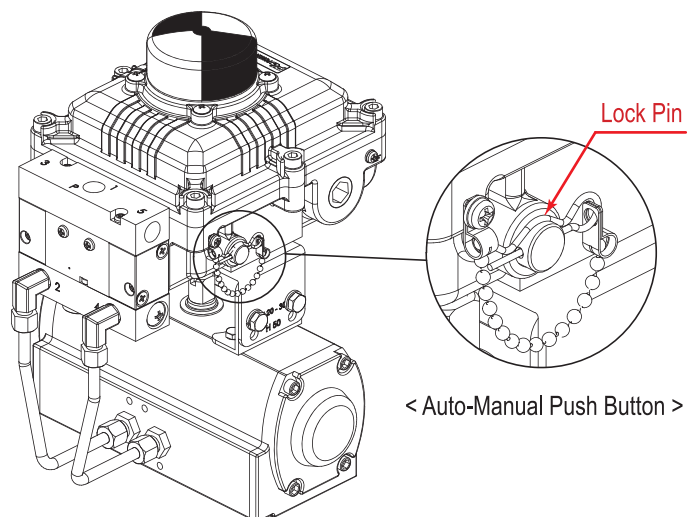


Solenoid Valve



< Symbols of Operation >

Supply Air		Filtered, compressed, dry and non-oiled air
Supply Air Pressure	2 position with single coil	1.5 ~ 9.9 bar
	2 position with dual coils	1.0 ~ 9.9 bar
Eff. Sectional Area (5 kfg/cm ²)		19.0 mm ²
Manual Override		Push button type
Response Time		25 ms or less
Max. Working Frequency		5 c/sec
Power Consumption		AC : 4.5 / 3.6VA (60Hz/50Hz) DC : 2.8W
Coil Insulation Class		Class F or equivalent
Permissible Voltage Variation		±10% of rated voltage
Lubrication		Not required



Specifications of Switches / Sensors

Mechanical Switches



< SPDT Mechanical Switch - GSM >

< SPDT Mechanical Switch - V7/V15 >

< DPDT Mechanical Switch - 22104 >

Maker	Standard
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	
16 amps / 250 VAC	
16 amps / 8 VDC , 10amps / 30 VDC	
Operating Temp.	-30 ~ +130℃

Maker	Honeywell
Switch type	SPDT (Form C)
Contacts	Silver-plated or gold-plated
Approvals	UL, CSA
Electrical Rating	
Silver : 16 amps / 125 / 250 VAC	
Gold : 0.1 amps / 125 / 250 VAC	
Operating Temp.	-40 ~ +125℃

Maker	Licon
Switch type	DPDT (Form CC)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	
10 amps / 125 / 250 VAC	
10 amps / 28 VDC	
Operating Temp.	-30 ~ +80℃

Proximity Sensors



Part Number / Maker	NJ2-V3-N / P&F
Switching element function	NAMUR NC
Nominal Ratings	
Nominal voltage	8.2 VDC
Switching frequency	0 ~ 1000 Hz
Hysteresis	0.01 ~ 0.1 mm
Current consumption	
Measuring plate not detected	> 3 mA
Measuring plate detected	< 1 mA
Operating Temperature	-25 ~ +100℃

Part Number / Maker	NJ2(4)-12GK-SN / P&F
Switching element function	NAMUR NC
Nominal Ratings	
Nominal voltage	8 VDC
Switching frequency	0 ~ 2000 Hz
Hysteresis	3%
Current consumption	
Measuring plate not detected	> 3 mA
Measuring plate detected	< 1 mA
Operating Temperature	-40(-50) ~ +100℃

Magnetic Proximity Sensors



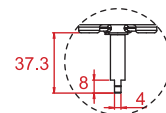
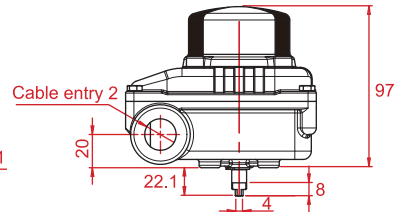
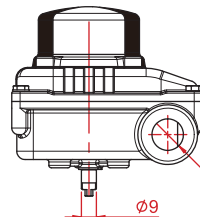
Part Number / Maker	MS Series / Power-genex
Switch type	SPDT (Form C)
Contacts	Rhodium / Tungsten
Approvals	UL, CSA
Electrical Ratings	
MS20 : 830 mA / 24VDC, 180 mA / 120VAC	
MS25 : 1 A / 24VDC, 200 mA / 120VAC	
MS100 : 2 A / 24VDC, 3 A / 120VAC, 1.5 A / 240VAC	
Operating Temperature	-40 ~ +130℃

Part Number / Maker	ESI-V3-CR / Euroswitch
Switch type	SPDT (Form C)
Contacts	Rhodium
Approvals	ATEX / IECEx / INMETRO Ex ia IIC T6
Electrical Ratings	
830 mA / 24VDC, 180 mA / 120VAC	
Ex : Ui = 30V, Ii = 250mA, Pi = 1.3w	
Operating Temperature	-20 ~ +80℃

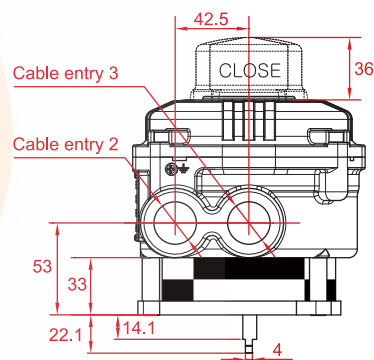
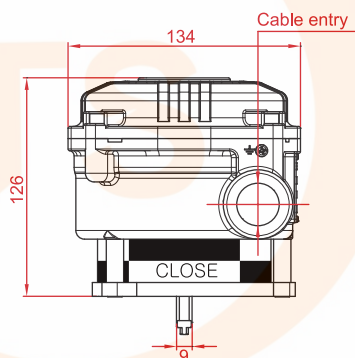
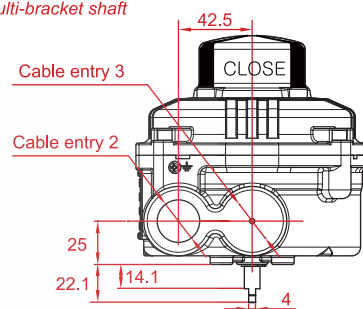
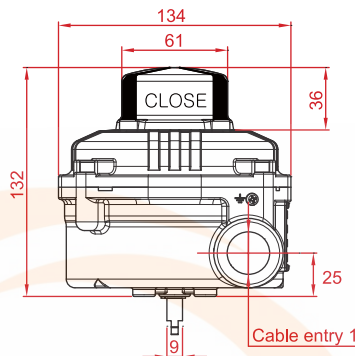
Switch Box Type	Body Material	Switches / Sensors	Position Transmitter	Explosion Proof	Beacon / Indicator	Electrical Connections	Number of Electrical Connections	Feedback Shaft	Mounting Bracket	Coil type	Power Supply	Pneumatic Connections
LSB-1 Weatherproof type	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT	0 None	7 Weatherproof IP67	N None	C PF 1/2	2 2 pcs	Rotary type N NAMUR shaft	Rotary type N None			
	1 Stainless steel 316	P&F Sensors 4 (2) NJ2-V3-N 7 (2) NBB3-V3-Z4 9 (2) NBB2-V3-E2 Autonics sensors 8 (2) PSN17-5D Honeywell J (2) SPDT Hermetically-sealed sensors A (2) MS-25 (1A) C (2) MS-20 (0.8A)		8 Weatherproof IP68	A Beacon indicator 90° (Open / Close)	D NPT 1/2 E M20 x 1.5 H PG 13.5		F Fork lever	1 30x80 x20(H)			
LSB-3 Explosion-proof type	0 Aluminum die-cast	Mechanical switches 0 (2) SPDT 2 (4) SPDT 3 (2) DPDT	0 None	K7 KCs Ex d IIC - IP67	N None	A PF 3/4	2 2 pcs					
	1 Stainless steel 316	P&F sensors 4 (2) NJ2-V3-N 5 (4) NJ2-V3-N 6 (2) NJ2-12GK-SN or NJ4-12GK-SN 7 (2) NBB3-V3-Z4 9 (2) NBB2-V3-E2 S(2) NJ2-12GM40-E2 R (2) NCN4-V3-NO T (2) SJ3 3.5-S1N Sensors 8 (2) PSN17-5D PNP or NPN N (2) D2VW-5L1-1M Hermetically-sealed proximity sensors	T 4~20mA output signal	A7 ATEX / IECEx Ex d IIC - IP67	A Beacon indicator 90° (Open / Close)	B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5	3 3 pcs					
LSB-7 Explosion-proof type (built-in solenoid v/v)	0 Aluminum die-cast	(Amp@24VDC) A (2) MS-25 (1A) B (4) MS-25 (1A) C (2) MS-20 (0.8A) D (4) MS-20 (0.8A) E (2) MS-100 (2A) F (4) MS-100 (2A) G (2) ESI-V3-CR H (4) ESI-V3-CR I (2) MONAS I(2A)	0 None	K KC Ex d IIB+H2 - IP67	N None	A PF 3/4	2 2 pcs	Rotary type N NAMUR shaft	Rotary type N None	N None	N None	N None
	1 Aluminum die-cast switch box / 316SS solenoid V/V		T 4~20mA output signal	A ATEX / IECEx Ex d IIB+H2 - IP67	A Beacon indicator 90° (Open / Close)	B NPT 3/4 C PF 1/2 D NPT 1/2 E M20 x 1.5 I M25 x 1.5	3 3 pcs 4 4 pcs	F Fork lever	M Multi-size Bracket R Other on request	S Single coil D Dual coil	A 220VAC B 110VAC C 24VDC D 48VDC	1 PT 1/4 2 NPT 1/4
2 316SS switch box & solenoid V/V		Honeywell switches J (2) SPDT(SILVER) K (4) SPDT(SILVER) L (2) SPDT(GOLD) M (4) SPDT(GOLD) Other on request			T T port indicator L L port indicator							
Switch Box Type	Body Material	Switches / Sensors	Position Transmitter	Explosion Proof	Beacon / Indicator	Electrical Connections	Number of Electrical Connections	Feedback Shaft	Mounting Bracket	Coil type	Power Supply	Pneumatic Connections

< LSB-1000 >

Technical drawings of the LSB-1000 sensor. The left drawing shows the front view with dimensions 115 (height) and 92 (width). The right drawing shows the top view with dimensions 46.50 (height) and 68.50 (width). Mounting holes are labeled with diameter $\varnothing 50$ and thread M6 - 6H x 10.



LSB-1000 / 3000
Multi-bracket shaft

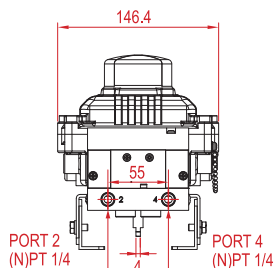
[illegible]

Technical drawing of the valve assembly showing dimensions: diameter $\varnothing 9$, height H_1 , and length L .

< Dual Coil Type >

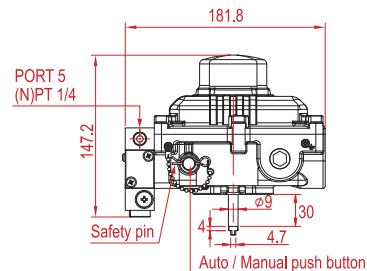
188.8

7



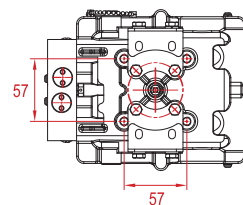
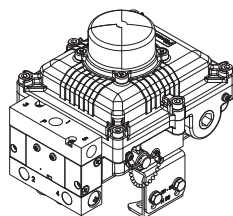
< Single Coil Type >

Technical drawing of the Single Coil Type sensor. The drawing shows a top-down view of the sensor head with a central circular opening. Dimensions are indicated: a width of 181.80 and a height of 146.40. Three ports are labeled on the right side: PORT 5 (N)PT 1/4, PORT 1 (N)PT 1/4, and PORT 3 (N)PT 1/4. The sensor is shown with a mounting bracket and a cable.

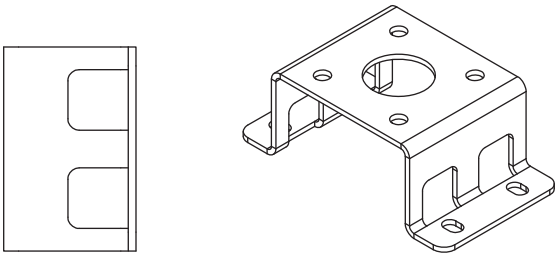
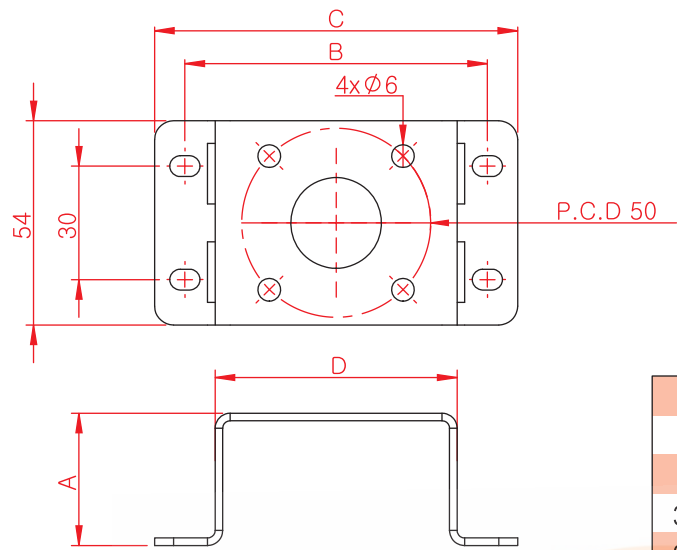


1) 80 x 30 x 20 (H) , 4) 130 x 30 x 20 (H)
2) 80 x 30 x 30 (H) , 5) 130 x 30 x 30 (H)
3) 80 x 30 x 50 (H) , 6) 130 x 30 x 50 (H)

H : Rotary Actuator Shaft Height
L : Length (80 or 130mm)



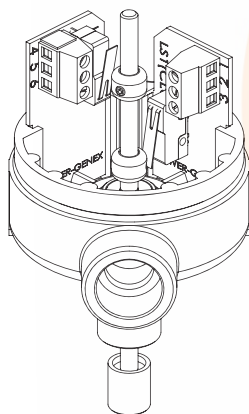
< Bracket : LSB-1000 / 3000 >



	A	B	C	D
30x80x20	35	80	96	64
30x80x30	45	80	96	64
30x130x30	45	130	150	100
30x130x50	65	130	150	100

< Wiring Diagram >

	LSB-1000 / 3000 / 7000	LSB-3000 / 7000
Mechanical Switches / Magnetic Sensors (SPDT)		
Mechanical Switches (DPDT)		
Proximity Sensors (P&F)		



Linear valve position monitor

Features

- ▶ Weatherproof to IP66
- ▶ Easy to mount and compact for angle seat valve or diaphragm valve

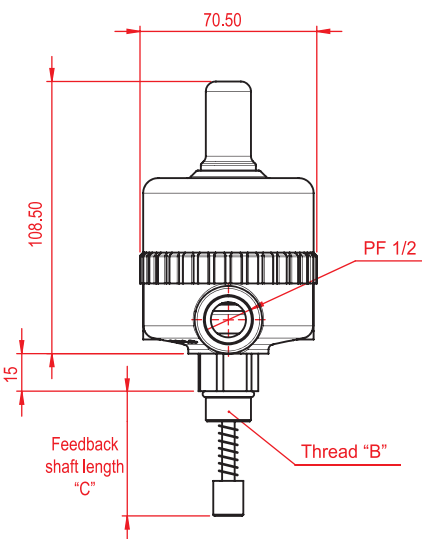
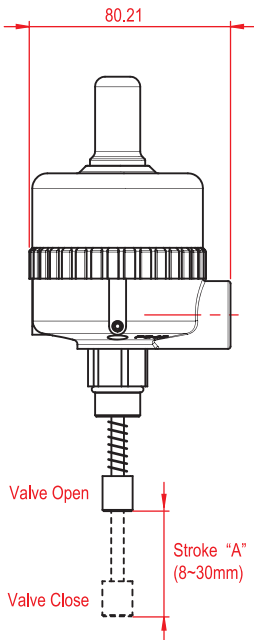
Specifications

	LSB-2000
Protection Class	IP66
Specifications of Switches	2 x SPDT (250 VAC @ 10.1A)
Linear Operating Stroke	8 ~ 30mm
Operating Temperature	-20 ~ +60℃ (-4 ~ +140°F)
Electrical connections	PF 1/2
Body material	PA
Weight	0.5 kg

How to Order

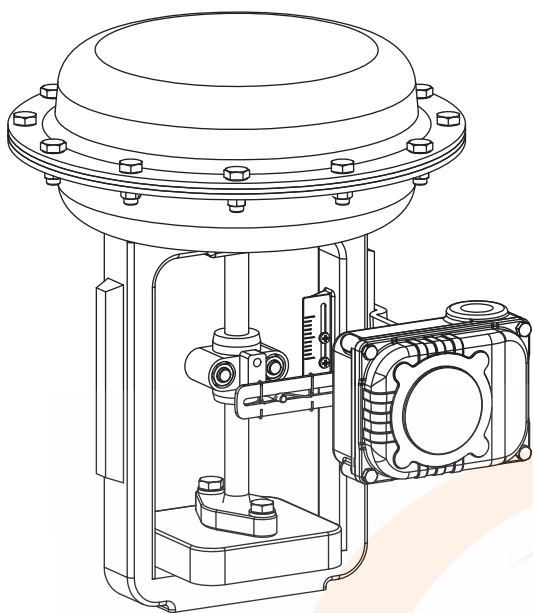
LSB-2000 - Stroke "A" - Mounting Threads "B" - Feedback Shaft Length "C"

Description	Code
Stroke (A) :	On request (8mm ~ 30mm)
Mounting Threads (B):	On request (Ex. M30 x 2.0)
Feedback Shaft Length (C):	On request

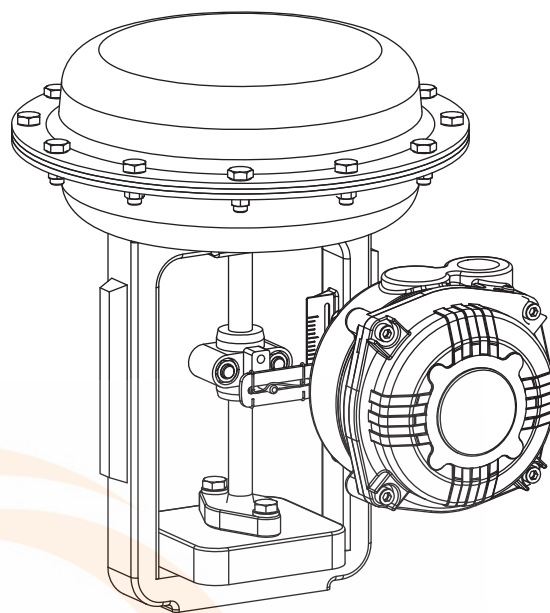


< SPDT Mechanical Switch - OMRON >

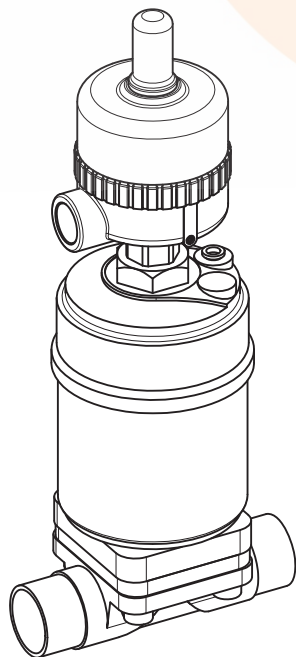
Technical Data	
Switch type	SPDT (Form C)
Contacts	Silver-plated
Approvals	UL, CSA
Electrical Rating	10.1 Amps / 250 VAC
Operating Temp.	-25 ~ +85℃



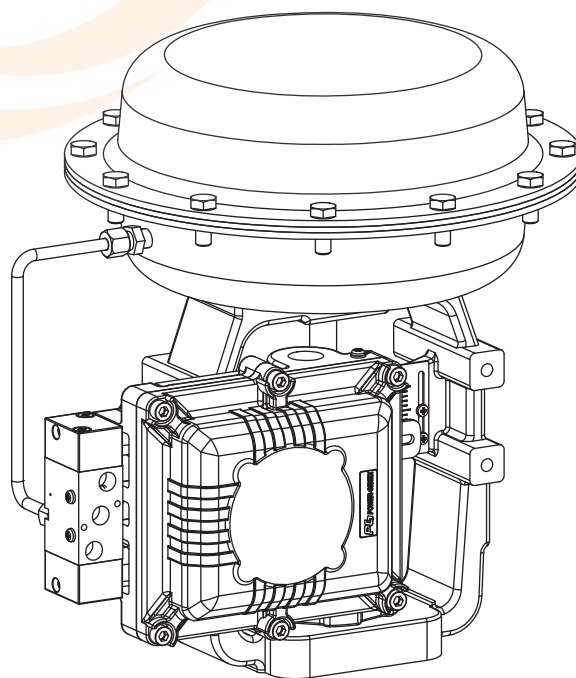
< Linear type - LSB-1000 >



< Linear type - LSB-3000 >



< Linear type - LSB-2000 >



< Linear type - LSB-7000 >

Solenoid Valve



ESV-S
(5/2 way)



ESV-SS
(SS316 valve body)



ESV-SC
(SS316)



ESV-3
(3/2 way)



ESV-3S
(SS316 valve body)



ESV-31
(3/2 way)

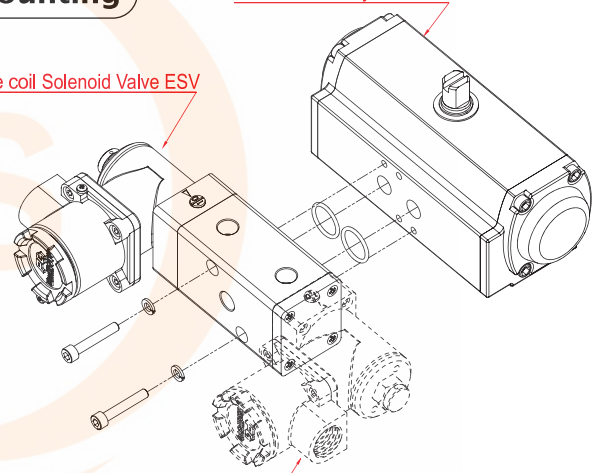
Features

- ▶ Flameproof ATEX / IECEx / KC Ex d IIC
- ▶ Rugged aluminum die-cast housing or optionally stainless steel 316 valve body
- ▶ Convertible from 5/2 way to 3/2 way
- ▶ Rotatable valve head for optimal mounting
- ▶ Direct NAMUR mounting or screw mounting

Mounting

Single coil Solenoid Valve ESV

Pneumatic rotary actuator



Dual coil solenoid valve

PG POWER-GENEX®